

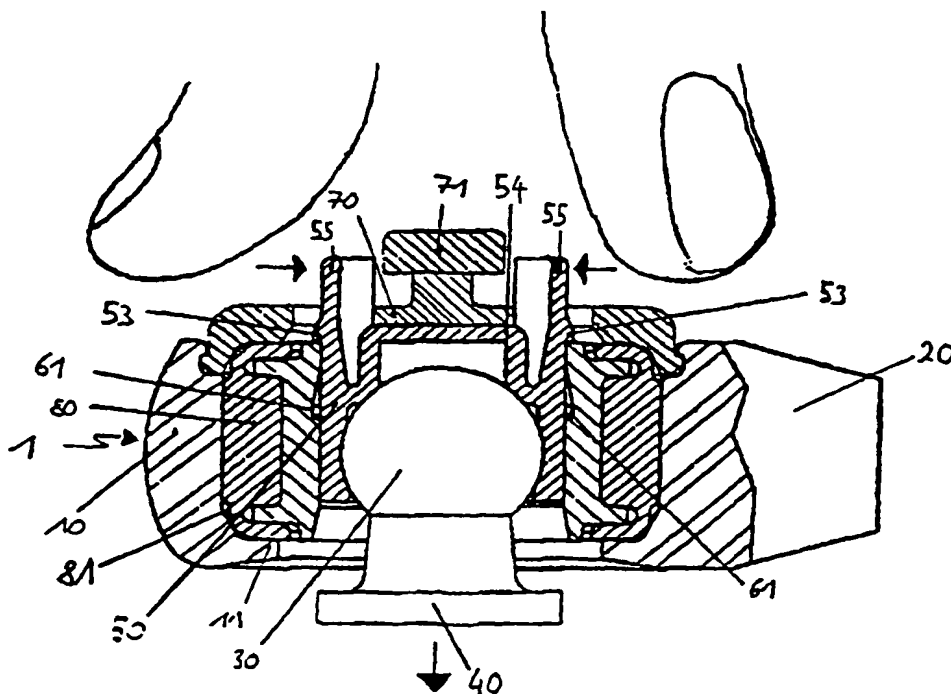


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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|--|-----------|--|
| <b>(51) International Patent Classification <sup>7</sup> :</b><br><b>F16C 11/06</b>  | <b>A1</b> | <b>(11) International Publication Number:</b> <b>WO 00/65245</b><br><b>(43) International Publication Date:</b> 2 November 2000 (02.11.00)   |
| <b>(21) International Application Number:</b> PCT/EP00/03027<br><b>(22) International Filing Date:</b> 5 April 2000 (05.04.00)<br><b>(30) Priority Data:</b><br>199 18 911.0      26 April 1999 (26.04.99)      DE<br><b>(71) Applicant (for all designated States except US):</b> FICO CABLES S.A. [ES/ES]; C/de Josep Pujol, s/n, E-08191 Rubi (ES).<br><b>(72) Inventors; and</b><br><b>(75) Inventors/Applicants (for US only):</b> SANCHEZ, Manuel Martin [ES/ES]; Pl. Constitucio 10, 4-1, E-08191 Rubi (ES). CONTERO, Juan M. Dona [ES/ES]; Prat de la Riba 24, 3-2, E-08191 Rubi (ES).<br><b>(74) Agent:</b> HESS, Peter, K.; Bardehle, Pagenberg, Dost, Altenburg, Geissler, Isenbruck, Galileiplatz 1, D-81679 München (DE). |           | <b>(81) Designated States:</b> BR, JP, KR, MX, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).<br><br><b>Published</b><br><i>With international search report.</i> |

**(54) Title:** CONNECTING ELEMENT**(57) Abstract**

The invention relates to a connecting element (1) for the releasable connection of a first part (20) with a second part (40), in particular a bowden cable with a lever, wherein the connecting element (1) comprises a housing (10) which is rigidly mounted to the first part (20), an engaging element (30) mounted to the second part (40) and a slide (50) having a receiving element (51) complementary shaped to the engaging element (30) for the releasable connection of the engaging element (30) with the receiving element (51). The slide (50) can inside the housing (10) slide from a first position into a second position for latching the releasable connection between the engaging element (30) and the receiving element (51). The connecting element (1) further comprises at least one latching means (53) for fixing the slide (50) in the second position and at least one releasing means (55) for manually acting onto the at least one latching means (53) in order to release the slide (50) from the second position for the unlatching of the releasable connection between the engaging element (30) and the receiving element (51).



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### Connecting element

#### 5    **1. Technical Field:**

The present invention relates to a connecting element for the releasable connection of a first part to a second part, in particular a Bowden cable to a lever.

#### **2. The Prior Art:**

10    In many fields of mechanical engineering there is the problem to interconnect two parts. An important case is the connection between a lever and a Bowden cable, for example when the movements of a shift lever are to be transmitted via a Bowden cable to the gear box of a vehicle or when a parking brake is to be operated by means of a braking lever via two braking cables. Thus, such a connection is in  
15    particular used in the automotive field, but also in construction machines or sport equipment a plurality of connections between separate components of a machine or the device are needed.

Such a device has to meet different requirements. On the one hand it should be  
20    reliable and stable so that the parts do not become unintentionally disconnected during their use (operation of a vehicle, movement of a construction machine, etc.) On the other hand, the connection should for cost reasons be designed such that the parts can during assembly easily and without excessive force be manually assembled. Connections with screws or the like are therefore excluded from the  
25    beginning.

In the prior art constructions are well-known, where the maximum mechanical loading on the connection exceeds the necessary force during assembly many times. These arrangements consist typically of a sphere-like head attached to the  
30    first part which is snapped into a dome shaped receptacle attached to the second

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part, whereby the sides of the dome shaped receptacle are bent. In order to provide a lasting latching of this connection, the dome shaped receptacle moves on a slide or the like together with the sphere-like head into an opening or recess of the second part whose walls avoid a bending of the sides of the dome shaped receptacle.

5 When the slide is latched at the end of the sliding motion, the simple movement of the sphere-like head in the direction of the dome shaped receptacle not only provided the actual connection between the two parts but also the automatic latching of the connection, which is therefore capable to resist mechanical loading exceeding many times over the force required for assembly.

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In many cases, however, the connection also has to be easily releasable. In case of the mentioned examples from the automotive field it is for example during repairs necessary to replace the Bowden cables and to separate them from the shift lever or braking lever. The connections used in the prior art are either (without destruc-

15 tion) not releasable at all or they require complicated special tools in order to release the slide or the like from its latched position so that the dome shaped receptacle can be moved back into its starting position and the sphere-like head can be removed therefrom.

20 A further disadvantage of connections of the described type is the fact that the stable connection between the sphere-like head and the dome shaped receptacle is directly transmitting vibrations from one part to the other part. This is in many cases a disadvantage, in particular for the above mentioned connection between a shift lever and a Bowden cable, since the vibrations transmitted from the motor on

25 the cable can thus be felt in the shift lever which renders precise shifting movements more difficult.

It is therefore the problem of the present invention to provide a simple and inexpensive connection between two parts which provides on the one hand a high me-

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chanical stability with an easy assembly but which can also easily manually be released.

According to a further aspect of the present invention, the connection is to damp  
5 the transmission of vibrations between the two parts.

### 3. Summary of the Invention:

The invention relates to a connecting element for the releasable connection of a first part to a second part, in particular a cable to a lever, wherein the connecting  
10 element comprises a housing rigidly attached to the first part, an engaging element attached to the second part and a slide with a receiving element complementary shaped to the engaging element for the releasable connection of the engaging element with the receiving element, wherein the slide can slide inside the housing from a first position into a second position for latching the releasable connection  
15 between the engaging element and the receiving element. The connecting element further comprises at least one latching means for fixing the slide in the second position and at least one releasing means which serves for manually acting onto the at least one latching means to release the slide from the second position for unlatching the releasable connection between the engaging element and the re-  
20 ceiving element.

By the at least one releasing means, which is integrally connected with the connecting element, the slide can with a simple movement of the hand be released from its latched position, in order to separate the two parts from each other. Special tools or special technical skills are not necessary. Thus, it is for example in  
25 case of the use in the automotive field also for a non-skilled person possible to perform repairs which need a disassembly of the connected parts. However, the high mechanical stability of the connection remains unaffected.

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Preferably, two snapping hooks are provided as the at least one latching means. The at least one releasing means is preferably provided as extensions of the two snapping hooks extending over the edge of the housing. In this preferred embodiment of the invention the slide is released from its latched position simply by manually pressing the extensions together. Since the force for pressing attacks at the end of the extensions, an easy release is due to the lever principle also possible in case of a stable latching.

According to a particularly preferred embodiment, the slide slides along a bushing extending through the housing. This bushing allows by a suitable material selection an optimization of the sliding properties of the slide and facilitates thus the assembly of the two parts. Preferably, the bushing is apart from one or more slits for the release means closed by a cover on the side opposite to the receiving element.

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A damping element for damping the transmission of vibrations between the two parts is preferably provided inside the housing. Preferably, the damping element is arranged between the bushing and the housing. Thus, the vibrational damping does not affect the stability of the connection between the engaging element and the slide. Preferably, the bushing has lateral projections or edges coacting with recesses of the damping element for its fixing.

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Further advantageous developments of the present invention are the subject matter of the depending claims.

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#### 4. Short description of the drawing:

In the following detailed description presently preferred embodiments of the present invention are described with reference to the figures, which show:

5     Figure 1:     A cross-section through a first preferred embodiment of the connecting element according to the invention immediately before the two parts are assembled;

10     Figure 2:     the same cross-section as in Figure 1 through the first preferred embodiment in the latched state;

Figure 3:     a top view of the preferred embodiment of the Figures 1 and 2;

15     Figure 4:     a cross-section through a further preferred embodiment without vibrational damping.

#### 5. Detailed description of the invention

With reference to Figure 1 the connecting element 1 comprises a housing 10, which is mounted to a first part 20. For connecting, an engaging element 30, which is mounted to a second part 40, is inserted into the housing 10 (see the lower vertical arrow in Figure 1). The two parts 20 and 40, of which in Figure 1 only the corresponding ends to be connected are schematically shown, can be any arbitrary mechanical elements, for example a bar or the end of a Bowden cable etc. In the preferred embodiment of the connecting element 1, shown in Figure 1, an essentially rectangular connection is produced. With a correspondingly modified housing 10 also a straight interconnection is possible, as well as any other

angle. This is without any importance for the mechanism of the connecting element 1 according to the invention described in the following.

The preferably sphere or egg shaped engaging element 30 snaps under a movement in the direction of the arrow (cf. Figure 1) into the preferably dome shaped receiving element 51, arranged at the lower end of a slide 50. The sides of the receiving element 51 are preferably provided with openings 52 which allow a lateral bending of the receiving element 51 to facilitate the connecting and releasing of the engaging element 30 with or from the receiving element 51. The slide 50 is preferably slideably arranged within a bushing 60 and preferably preliminary fixed by lateral snapping hooks 53 which engage corresponding recesses 61 of the bushing 60. Under a further movement of the engaging element in the direction of the arrow, the complete slide 50 slides from its starting position upwards inside the bushing 60 (cf. upper vertical arrow in Figure 1), until an intermediate support 55 of the slide 50 contacts the lower side of a cover 70 (cf. Figure 2) which closes the housing on its upper side. Also other limitations for the sliding movement are possible, for example a stopper inside the bushing 60.

The preferred cover 70 protects the connecting mechanism against the accumulation of dirt and against damages. Furthermore, a holding and/or support surface 71 is provided on the upper side of the cover 70 for supporting the complete connecting element 1 when the engaging element 30 is being inserted (cf. the indicated finger in Figure 1). In the preferred embodiment shown in Figures 1 to 3, the cover 70 is clipped onto the housing 10. Other ways of mounting are also possible.

In the above position the snapping hooks 53 engage preferably the edge of the bushing 60 (cf. Figure 2) and thus fix the slide 50 against an axial movement in the direction of the downwards pointing arrow in Figure 2. Conceivable is also an



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embodiment, where the snapping hooks 53 engage additional upper recesses (not shown) of a correspondingly elongated bushing 60.

When the slide 50 slides upwards, the sides of the receiving element 51 are automatically compressed by the bushing 60 so that the sphere-like or egg-like engaging element 30 is rigidly fixed within the receiving element 51. As a result, the upward movement of the connector 51 provides a connection between the first part 20 and the second part 50 which is capable to resist high mechanical loading.

As can be seen from Figure 2, preferably two releasing means 55 are provided for releasing the connection of the two parts 20, 40 which are preferably provided as extensions of the two snapping hooks 53. When the slide is in the upper latched position, these two extensions 55 extend preferably through an opening 72 (cf. Figure 3) in the cover 70 over the edge of the housing 10. Thus, it is by means of a simple pressing of the two extensions 55 (cf. horizontal arrows in Figures 2 and 3) possible to release the slide 50 from its latched position, so that it can slide downwards with a downwardly directed pulling on the first part 20 (cf. vertical arrow in Figure 2) and the dome shaped receiving element 51 can release the engaging element 30. The connecting element 1 is then once again in the starting position shown in Figure 1.

In order to allow an easy manual release of the slide 50 from its latched position even with very stiff snapping hooks 53, the releasing means 55 might be longer than shown in Figures 1 and 2. The stiffness of the snapping hooks 53, which is essential for the maximum mechanical loading, of the connection is determined by the flexibility and material thickness of the sidewalls of the slide 50.

Further to the above discussed embodiment, where the releasing means 55 are provided as extensions of the snapping hooks 53 it is also possible to separately provide them on the housing 10 and to have them act onto the snapping hooks 53 by a rotational or a sliding movement etc. to release the slide 50 from its latched position.

In the embodiment shown in Figures 1 to 3 of the connecting element 1 according to the invention, vibrations are damped additionally to the already described functions. To this end, a flexible damping element is preferably arranged between the bushing 60 in which the slide 50 slides and the housing 10. Vibrations of the housing 10 are therefore only to a limited extent transmitted to the bushing 60 and thus to the engaging element 30 on which the second part 40 is attached.

Preferably, the damping element 80 is arranged between a lower projecting edge 11 of the housing 10 and the already above mentioned cover 17 at the upper edge of the housing 10. Thus, a direct mechanical contact between the housing 10 and the bushing 60 is effectively avoided. For a fixing of the bushing 60 relative to the damping element 80 it comprises on the upper and the lower side lateral projections or edges 62 engaging corresponding recesses 81 of the damping element 80.

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Figure 4 shows a simplified embodiment of the present invention without a vibrational damping. In this case the slide 50 slides directly along an opening inside the housing 10. The recesses 61 for the preliminary fixing of the slide 50 in the first position are as well as additional recesses 12 for the upper position directly provided in the housing 10. Further, the cover 70 is in this embodiment preferably an integral part of the housing 10 (cf. the hatching in Figure 4).

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The described connecting element is preferably made of plastic materials or metals. Metals have a greater stability, whereas plastic materials, as for example Polyamide, are less expensive to produce, for example with injection molding. For the damping element 80 preferably typical Elastomers are used. For the selection  
5 of the materials for the slide 50 and the bushing 60 or the housing 10, respectively, it should be taken care that good sliding properties are achieved in order to provide an easy connecting of the two parts.

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Claims

1. Connecting element (1) for the releasable connecting of a first part (20) with a second part (40), in particular a bowden cable with a lever, comprising:
  - a) a housing (10) which is rigidly attached to the first part (20);
  - b) an engaging element (30) attached to the second part (40);
  - c) a slide (50) with a receiving element (51) complementary shaped to the engaging element (30) for the releasable connecting of the engaging element (30) with the receiving element (51), where the slide (50) can slide inside the housing (10) from a first position into a second position for latching the releasable connection between the engaging element (30) and the receiving element (51);
  - d) at least one latching means (53) for fixing the slide (50) in the second position;
  - e) at least one releasing means (55) for manually acting onto the at least one latching means (53) to release the slide (50) from the second position for unlatching the releasable connection between the engaging element (30) and the receiving element (51).
2. Connecting element according to claim 1, wherein two snapping hooks (53) are provided as latching means (53) and one release lever (55) as a release means (55).
3. Connecting element according to claim 2, wherein the at least one release lever (55) is provided as two extensions (55) of the two snapping hooks (53) extending over the edge of the housing (10).

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4. Connecting element according to one of the preceding claims, wherein the slide (50) slides along a bushing (60) extending through the housing (10).
- 5 5. Connecting element according to one of the claims 2 to 4, wherein additional recesses (61) for the snapping hooks (53) are provided inside the bushing (60) to preliminary fix the slide (50) for facilitating the connecting of the engaging element (30) with the receiving element (51) in the first position.
- 10 6. Connecting element according to claims 4 or 5, wherein the bushing (60) is apart from one or more slits (72) for the release lever (55) covered by a cover (70) on the side opposite to the engaging element (30).
- 15 7. Connecting element according to claim 6, wherein on the outer side of the cover (70) a holding and/or support surface (71) is arranged for facilitating the connecting of the two parts (20, 40).
- 20 8. Connecting element according to one of the preceding claims, wherein a damping element (80) for damping the transmission of vibrations between the two parts (20, 40) is provided inside the housing (10).
9. Connecting element according to claim 8, wherein the damping element (80) is arranged between the bushing (60) and the housing (10).
- 25 10. Connecting element according to claim 9, wherein the bushing comprises lateral projections or edges (62) coacting for its fixing with recesses (81) of the damping element (80).

Fig. 1

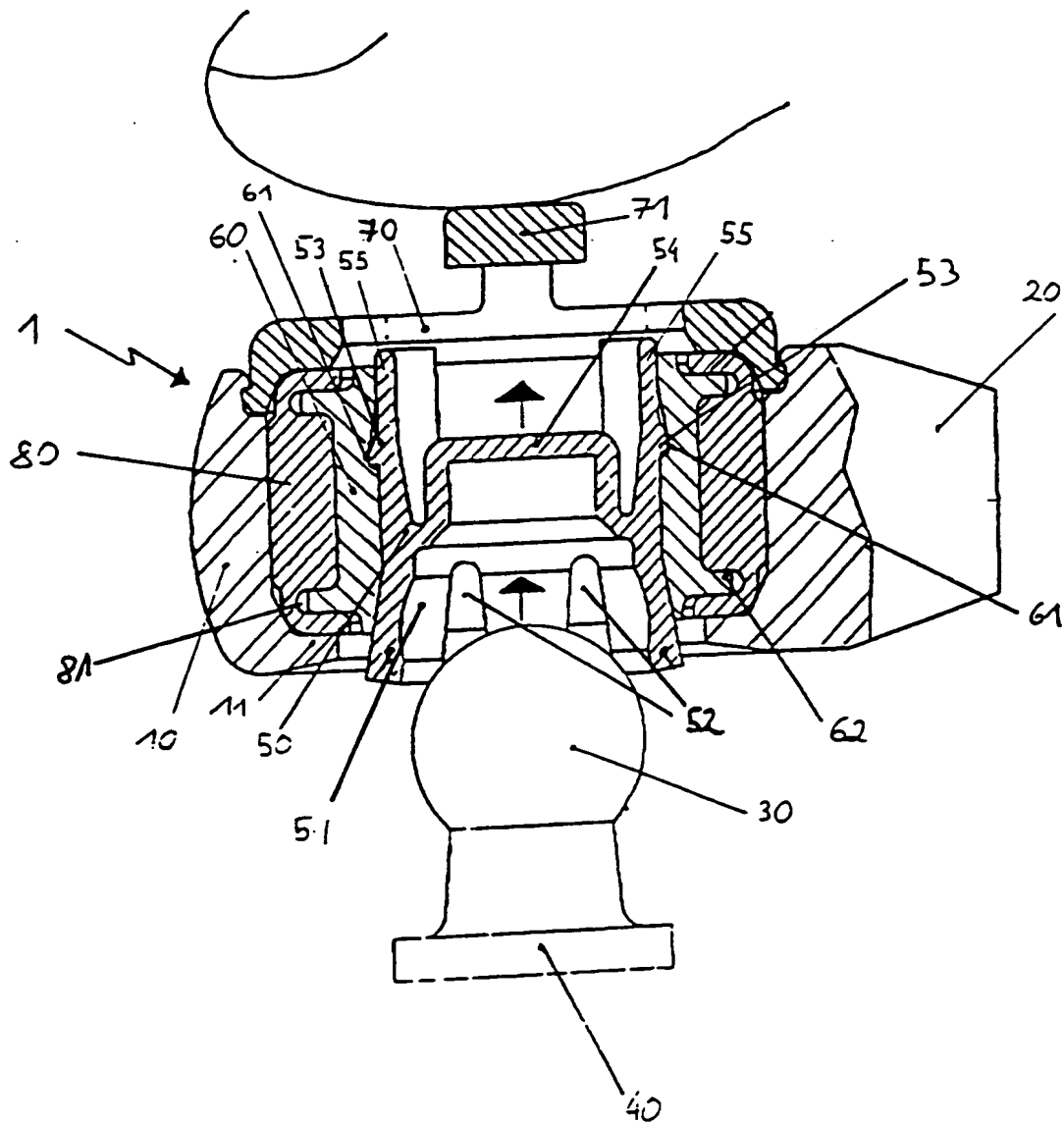


Fig. 2

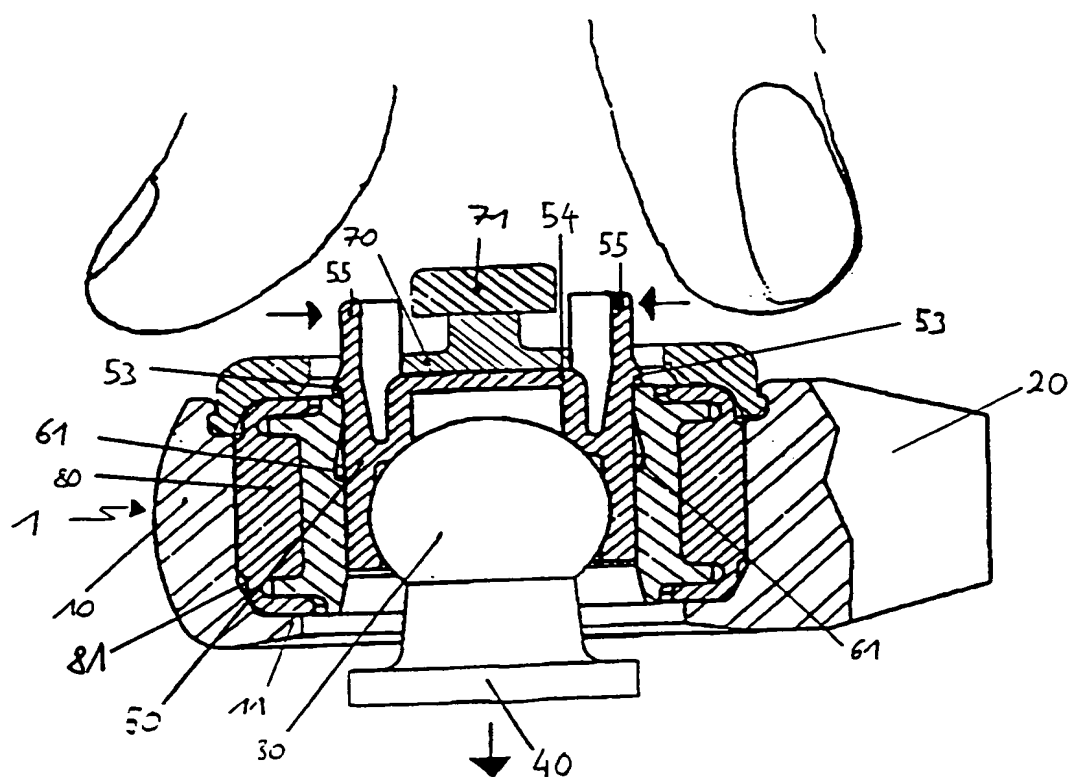
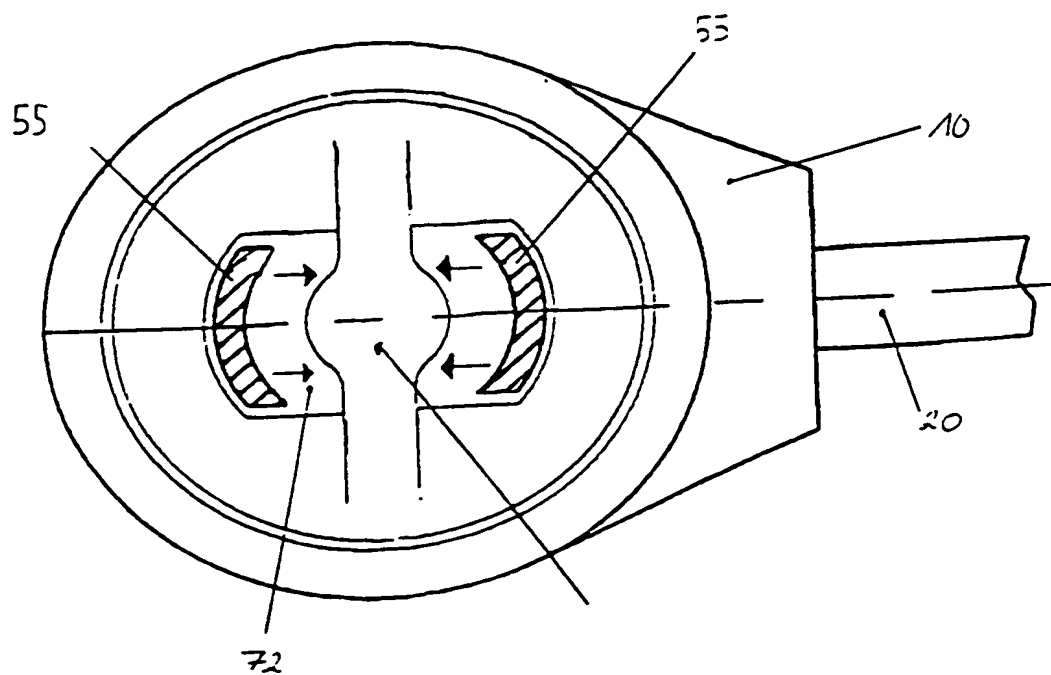
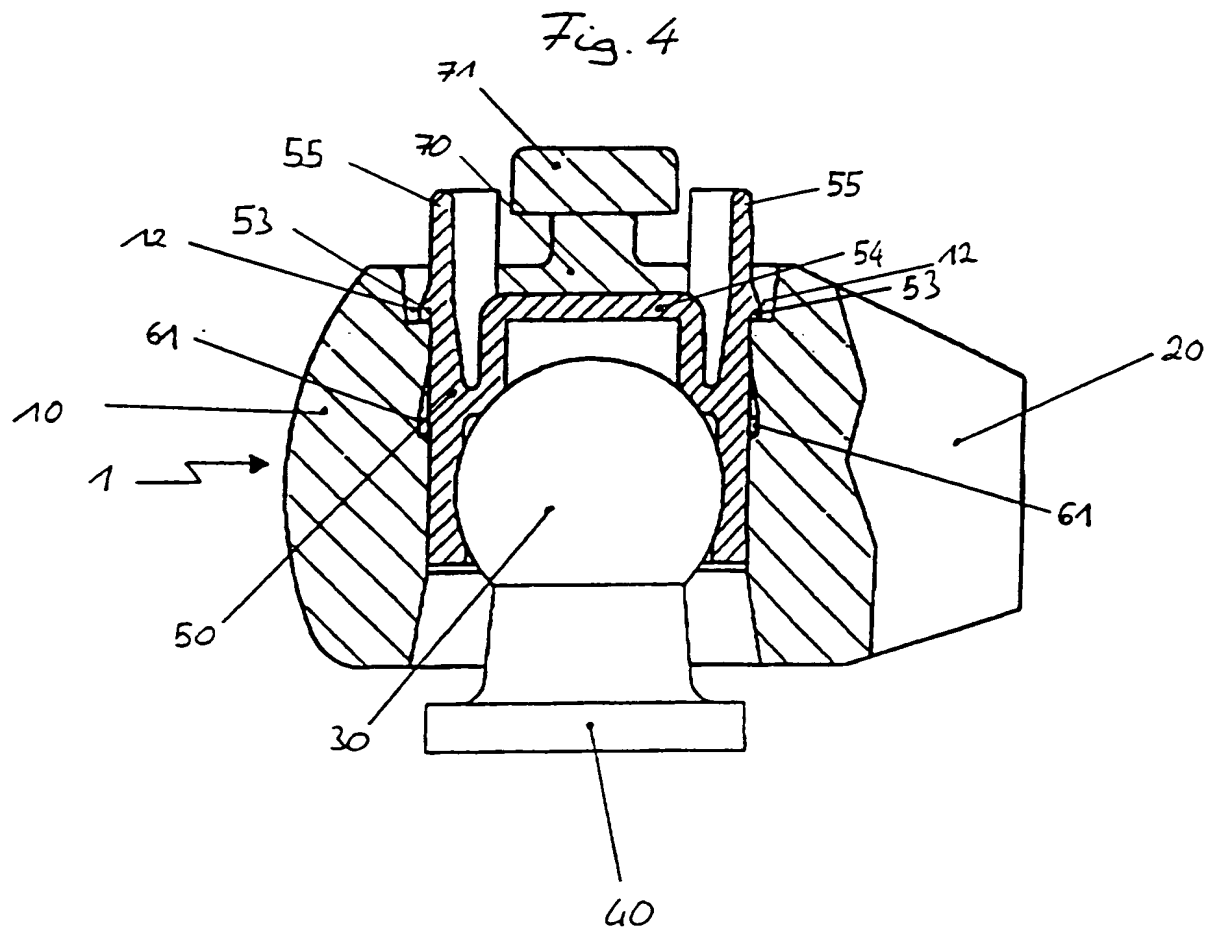


Fig. 3







## INTERNATIONAL SEARCH REPORT

Int. J. Application No.

PCT/EP 00/03027

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 F16C11/06

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F16C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| X          | DE 44 28 496 A (SPRINGFIX<br>BEFESTIGUNGSTECHNIK)<br>15 February 1996 (1996-02-15)<br>the whole document                            | 1,2,4-6               |
| X          | DE 198 24 530 A (STABILUS GMBH)<br>10 December 1998 (1998-12-10)<br>the whole document  | 1,2,4-6               |
| A          | US 5 265 495 A (BUNG HUBERT ET AL)<br>30 November 1993 (1993-11-30)<br>column 4, line 50 -column 5, line 54;<br>figure 4<br><br>-/- | 1,8-10                |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
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Date of the actual completion of the international search

12 July 2000

Date of mailing of the international search report

21/07/2000

Name and mailing address of the ISA

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Authorized officer

Hoffmann, M

## INTERNATIONAL SEARCH REPORT

Int. Application No.

PCT/EP 00/03027

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| A          | DE 298 04 345 U (SPRINGFIX<br>BEFESTIGUNGSTECHNIK)<br>14 May 1998 (1998-05-14)<br>page 7, line 25 -page 8, line 30; claim 3;<br>figure 1 | 1,3                   |
| A          | US 5 676 485 A (LEE HEE BANG)<br>14 October 1997 (1997-10-14)<br>the whole document  | 1                     |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Application No

PCT/EP 00/03027

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---|---------------------|----------------------------|---------------------|
| DE 4428496                                | A | 15-02-1996          | NONE                       |                     |
| DE 19824530                               | A | 10-12-1998          | NONE                       |                     |
| US 5265495                                | A | 30-11-1993          | DE 69316497 D              | 26-02-1998          |
|   |   |                     | DE 69316497 T              | 14-05-1998          |
|   |   |                     | EP 0589550 A               | 30-03-1994          |
|   |   |                     | ES 2113487 T               | 01-05-1998          |
| DE 29804345                               | U | 14-05-1998          | NONE                       |                     |
| US 5676485                                | A | 14-10-1997          | NONE                       |                     |

# PARENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|   |  |  |
|---|--|--|
| Applicant's or agent's file reference<br><b>F28993 PC</b> | <b>FOR FURTHER ACTION</b> <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small> |  |
| International application No.<br><b>PCT/EP 00/ 03027</b>  | International filing date (day/month/year)<br><b>05/04/2000</b>  | (Earliest) Priority Date (day/month/year)<br><b>26/04/1999</b> |
| Applicant<br><br><b>FICO CABLES S.A. et al.</b>           |  |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.  
☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

**4. With regard to the title,**

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

**5. With regard to the abstract,**

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- ☒ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- 2  
☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP 00/03027

## Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The invention relates to a connecting element (1) for the releasable connection of a first part (20) with a second part (40), in particular a bowden cable with a lever, wherein the connecting element (1) comprises a housing (10) which is rigidly mounted to the first part (20) an engaging element (30) mounted to the second part (40) and a slide (50) having a receiving element (51) complementary shaped to the engaging element (30) for the releasable connection of the engaging element (30) with the receiving element (1). The slide (50) can inside the housing (10) slide from a first position into a second position for latching the releasable connection between the engaging element (30) and the receiving element (51). The connecting element (1) further comprises at least one latching means (53) for fixing the slide (50) in the second position and at least one releasing means (55) for manually acting onto the at least one latching means (53) in order to release the slide (50) from the second position for the unlatching of the releasable connection between the engaging element (30) and the receiving element (51).

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 31 JUL 2001

WIPO

|   |   |  |
|---|---|--|
| Applicant's or agent's file reference<br>F28993 PC  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |  |
| International application No.<br>PCT/EP00/03027   | International filing date (day/month/year)<br>05/04/2000  | Priority date (day/month/year)<br>26/04/1999 |
| International Patent Classification (IPC) or national classification and IPC<br>F16C11/06 |   |  |
| Applicant<br>FICO CABLES S.A. et al.  |   |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

|   |   |
|---|---|
| Date of submission of the demand<br><br>23/11/2000  | Date of completion of this report<br><br>27.07.2001   |
| Name and mailing address of the international preliminary examining authority:<br><br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized officer<br><br>Hunter, E<br><br>Telephone No. +49 89 2399 2941  |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/03027

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

1-9 as originally filed

### Claims, No.:

1-10 as originally filed

### Drawings, sheets:

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/03027

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |      |        |          |
|-------------------------------|------|--------|----------|
| Novelty (N)                   | Yes: | Claims | 1-10     |
|                               | No:  | Claims |          |
| Inventive step (IS)           | Yes: | Claims | 3        |
|                               | No:  | Claims | 1,2,4-10 |
| Industrial applicability (IA) | Yes: | Claims | 1-10     |
|                               | No:  | Claims |          |

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/03027

**V**

Document DE-A-4428496, D1, discloses a connecting element having a housing, an engaging element, a slide with a receiving element complementary to the engaging element and slidable between two positions to latch the engaging element, there being latching means and releasing means.

In claim 1 the releasing means are "for manually acting onto the latching means", which is apparently intended to mean that the releasing means are manually operable.

Although D1 mentions the use of a tool for releasing the latching means, the possibility of direct manual release of the latching means (the surface of the latching means comprising the releasing means) would not involve a skilled man in an inventive step. For example, an operator mislaying a tool would readily try manual release.

The same point arises with respect to DE-A-19824530.

The dependent claims 2,4-10 do not appear to contain any additional features which involve an inventive step, since the features are either known from the documents of the search report or are features which the man skilled in the art can be expected to consider in the course of his normal activity and to apply according to requirements.

**VII**

The independent claim is not cast in the two-part form, with those features which in combination are part of the prior art being placed in the preamble, Rule 6.3 (b).

The most relevant documents of the search report are not identified and evaluated in the description, Rule 5.1(a)(ii).

**VIII**

Claim 2 is indefinite since the features of the lever (location and extent) are not indicated, Art 6 PCT.

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

Wg  
**PCT**

To:

Hess, Peter K.  
BARDEHLE PAGENBERG DOST ALTENBURG  
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Galileiplatz 1  
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ALLEMAGNE

30. Juli 2001

**NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 27.07.2001

Applicant's or agent's file reference  
F28993 PC

**IMPORTANT NOTIFICATION**

International application No.  
PCT/EP00/03027

International filing date (day/month/year)  
05/04/2000

Priority date (day/month/year)  
26/04/1999

Applicant  
FICO CABLES S.A. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

**4. REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



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